IN THE CLAIMS:

1. (currently amended) A method for analyzing stored frames of time-stamped imaging data and time-stamped physiologic data obtained during a study of a patient during a plurality of cardiac cycles, the imaging data comprising frames representative of a succession of images of the patient's heart, said method comprising utilizing a computer in communication with an imaging system and a monitoring system to:

time-stamp each of the frames of the imaging data acquired by said computer using a first clock within the imaging system;

time-stamp at least one feature within the physiologic data using a second clock within the monitoring system, the second clock different than the first clock;

store the time-stamped frames of the imaging data and the time-stamped physiologic data within a memory device;

synchronize time-stamps generated by the first clock with time-stamps generated by the second clock by comparing the first clock and the second clock to a reference clock within the memory device;

analyze the stored time-stamped physiologic data to determine times of a selected phase in the plurality of cardiac cycles;

select, in the plurality of cardiac cycles, the stored time-stamped frames of imaging data corresponding to the determined times of the selected phase;

align and average the selected frames of imaging data corresponding to the selected phase across the plurality of cardiac cycles; and

produce a single representative frame of image data based on the aligned and averaged frames of imaging data.

2. (previously presented) A method in accordance with Claim 1 further comprising utilizing the computer to filter non-left ventricle anatomy from the single representative frame of image data.

3. (previously presented) A method in accordance with Claim 2 further comprising utilizing the computer to detect edges of a left ventricle wall in the filtered, single representative frame of image data.

4. (previously presented) A method in accordance with Claim 3 further comprising utilizing the computer to determine cardiac volume utilizing said filtered, single representative frame of image data.

5. (original) A method in accordance with Claim 4 wherein said selected cardiac phase is a systolic phase and said determined cardiac volume is a systolic volume.

6. (original) A method in accordance with Claim 4 wherein said selected cardiac phase is a diastolic phase and said determined cardiac volume is a diastolic volume.

7. (previously presented) A method wherein the method of Claim 4 is performed for both a selected systolic phase and a selected diastolic phase to determine both a systolic volume and a diastolic volume, and further comprising utilizing the computer to determine an ejection fraction utilizing said determined systolic volume and said determined diastolic volume.

8. (original) A method in accordance with Claim 1 wherein the physiologic data comprises ECG waveform data.

9. (cancelled)

10. (original) A method in accordance with Claim 1 wherein said imaging data comprises X-ray imaging data.

11. (original) A method in accordance with Claim 10 wherein the X-ray imaging data comprises data enhanced by injection of a contrast agent into the cardiovascular system of the patient.

12. (currently amended) A cardiology analysis apparatus for analyzing stored frames of time-stamped imaging data and time-stamped physiologic data obtained during a study of a patient during a plurality of cardiac cycles, the imaging data comprising frames representative of a succession of images of the patient's heart, said apparatus comprising:

an imaging system;

a monitoring system; and

a computer in communication with said imaging system and said monitoring system, said computer configured to:

time-stamp each of the frames of the imaging data acquired by said apparatus using a first clock within said imaging system;

time-stamp at least one feature within the physiologic data using a second clock within said monitoring system, the second clock different than the first clock;

store the time-stamped frames of the imaging data and the time-stamped physiologic data within a memory device;

synchronize time-stamps generated by the first clock with time-stamps generated by the second clock by comparing the first clock and the second clock to a reference clock within the memory device;

analyze the stored time-stamped physiologic data to determine times of a selected phase in the plurality of cardiac cycles;

select, in the plurality of cardiac cycles, the stored time-stamped frames of imaging data corresponding to the determined times of the selected phase;

align and average the selected frames of imaging data corresponding to the selected phase across the plurality of cardiac cycles; and

produce a single representative frame of image data based on the aligned and averaged frames of imaging data.

13. (original) An apparatus in accordance with Claim 12 wherein said computer is further configured to filter non-left ventricle anatomy from the single representative frame of image data.

14. (original) An apparatus in accordance with Claim 13 wherein said computer is further configured to detect edges of a left ventricle wall in the filtered, single representative frame of image data.

15. (original) An apparatus in accordance with Claim 14 wherein said computer is further configured to determine cardiac volume utilizing said filtered, single representative frame of image data.

16. (original) An apparatus in accordance with Claim 15 wherein said selected cardiac phase is a systolic phase and said determined cardiac volume is a systolic volume.

17. (original) An apparatus in accordance with Claim 15 wherein said selected cardiac phase is a diastolic phase and said determined cardiac volume is a diastolic volume.

18. (original) An apparatus in accordance with Claim 15 wherein for both a selected systolic phase and a selected diastolic phase, said computer is configured to determine both a systolic volume and a diastolic volume, and said computer is further configured to determine an ejection fraction utilizing said determined systolic volume and said determined diastolic volume.

19. – 21. (cancelled)

22. (currently amended) A method for analyzing stored frames of time-stamped cyclical image data obtained during a study of an object during a plurality of cycles, said method comprising utilizing a computer in communication with an imaging system and a monitoring system to:

time-stamp at least one frame within the cyclical image data acquired by said computer using a first clock within the imaging system;

time-stamp at least one feature within physiologic data acquired by said computer using a second clock within the monitoring system, the second clock different than the first clock;

store the time-stamped cyclical image data and the time-stamped physiologic data within a memory device;

synchronize time-stamps generated by the first clock with time-stamps generated by the second clock by comparing the first clock and the second clock to a reference clock within the memory device;

analyze the stored time-stamped cyclical image data to determine time of a selected phase of the cycle;

select, in the plurality of cycles of time-stamped cyclical image data, stored images corresponding to the determined times of the selected phase;

align and average the selected images corresponding to the selected phase across the plurality of cycles; and

produce a single representative frame of image data based on the aligned and averaged frames of imaging data.

23. (currently amended) An analysis apparatus for analyzing stored frames of time-stamped cyclical imaging data and time-stamped waveform data obtained during a study of an object during a plurality of cycles, the imaging data comprising frames representative of a succession of images of the object, said apparatus comprising:

an imaging system;

a monitoring system; and

a computer in communication with said imaging system and said monitoring system, said computer configured to:

time-stamp each of the frames within the cyclical image data acquired by said apparatus using a first clock within said imaging system;

time-stamp at least one feature within the waveform data using a second clock within said monitoring system, the second clock different than the first clock;

store the time-stamped frames of the cyclical image data and the time-stamped waveform data in a memory device;

synchronize time-stamps generated by the first clock with time-stamps generated by the second clock by comparing the first clock and the second clock to a reference clock within the memory device;

analyze the stored time-stamped waveform data to determine times of a selected phase in the plurality of cycles;

select, in the plurality of cycles, stored frames of time-stamped cyclical imaging data corresponding to the determined times of the selected phase;

align and average the selected frames of imaging data corresponding to the selected phase across the plurality of cycles; and

produce a single representative frame of image data using the aligned and averaged frames of imaging data.

24. (new) A method in accordance with Claim 1 wherein synchronizing time-stamps generated by the first clock with time-stamps generated by the second clock further comprises calculating at least one of a link delay and a local offset, the local offset calculated with respect to the reference clock and one of the first clock and the second clock.

25. (new) An apparatus in accordance with Claim 12 wherein said computer is configured to:

calculate a first offset between the first clock and the reference clock; and

calculate a second offset between the second clock and the reference clock.

26. (new) An apparatus in accordance with Claim 25 wherein said computer is configured to:

adjust the time-stamps generated by the first clock based on the first offset; and

adjust the time-stamps generated by the second clock based on the second offset.

27. (new) An apparatus in accordance with Claim 25 wherein said computer is configured to merge the time-stamped imaging data with the time-stamped physiological data

based on the time-stamps generated by the first clock, the time-stamps generated by the second clock, the first offset, and the second offset.